1. A method of symbol determination in a direct sequence spread spectrum multiple access communication system having a plurality of code channels in use, the method comprising:

(a) linearly filtering a received signal to form a first filtered signal;

(b) despreading the first filtered signal and providing a plurality of symbol estimates for all corresponding code channels of the plurality of code channels;

(c) generating an estimated transmitted signal from the plurality of symbol estimates;

(d) generating an estimated received signal from the estimated transmitted signal and a channel estimate;

(e) producing a residual signal as a difference between the received signal and the estimated received signal;

(f) linearly filtering the residual signal to form a second filtered signal;

(g) combining the second filtered signal with the estimated transmitted signal to form a next estimated transmitted signal; and

(h) despreading the next estimated transmitted signal and providing a next plurality of symbol estimates for a selected code channel of the plurality of code channels.

2. The method of claim 1, wherein the linear filtering of step (a) further comprises minimum mean square error feedforward equalization.

3. The method of claim 2, wherein a plurality of coefficients of the minimum mean square error feedforward equalization are adaptive to an error determined from the received signal and a known pilot signal.

4. The method of claim 3, wherein the plurality of coefficients are adaptive using a least mean square algorithm.

5. The method of claim 3, wherein the plurality of coefficients are adaptive using a recursive least squares algorithm.

6. The method of claim 2, wherein a plurality of coefficients of the minimum mean square error feedforward equalization are directly computed from the channel estimate and an estimate of channel geometry.

7. The method of claim 2, wherein a plurality of coefficients of the minimum mean square error feedforward equalization are determined from an estimate of a correlation matrix of the received signal and an estimate of a channel mean.

8. The method of claim 1, wherein the linear filtering of step (a) further comprises multiple stage Weiner filtering.

9. The method of claim 1, wherein the linear filtering of step (f) further comprises minimum mean square error feedforward equalization.

10. The method of claim 1, wherein the linear filtering of step (f) further comprises matched filtering.

11. The method of claim 1, wherein step (b) further comprises generating an amplitude estimate for all corresponding code channels of the plurality of code channels and generating a confidence measure for each symbol estimate of the plurality of symbol estimates.

12. The method of claim 11, wherein generating the estimated transmitted signal of step (c) further comprises:

weighting each symbol estimate by its corresponding confidence measure to form a plurality of weighted symbols; and

spreading the plurality of weighted symbols using a corresponding plurality of orthogonal codes, a corresponding plurality of amplitude estimates, and a sector spreading code.

13. The method of claim 1, wherein step (d) further comprises:

generating the channel estimate by correlation of the received signal with a known pilot signal.

14. The method of claim 1, further comprising:

iteratively repeating steps (c) through (g) until a selected level of accuracy is obtained.

15. An apparatus for symbol determination in a direct sequence spread spectrum multiple access communication system having a plurality of code channels in use, the apparatus comprising:

first means for linearly filtering a received signal to form a first filtered signal;

means for despreading the first filtered signal and providing a plurality of symbol estimates for all corresponding code channels of the plurality of code channels;

means for generating an estimated transmitted signal from the plurality of symbol estimates;

means for generating an estimated received signal from the estimated transmitted signal and a channel estimate;

means for producing a residual signal as a difference between the received signal and the estimated received signal;

second means for linearly filtering the residual signal to form a second filtered signal;

means for combining the second filtered signal with the estimated transmitted signal to form a next estimated transmitted signal; and

means for despreading the next estimated transmitted signal and providing a next plurality of symbol estimates for a selected code channel of the plurality of code channels.

16. The apparatus of claim 15, wherein the first means for linear filtering further comprises means for minimum mean square error feedforward equalization.

17. The apparatus of claim 16, wherein a plurality of coefficients of the means for minimum mean square error feedforward equalization are adaptive to an error determined from a received signal and a known pilot signal.

18. The apparatus of claim 17, wherein the plurality of coefficients are adaptive using a least mean square algorithm.

19. The apparatus of claim 17, wherein the plurality of coefficients are adaptive using a recursive least squares algorithm.

20. The apparatus of claim 16, wherein a plurality of coefficients of the means for minimum mean square error feedforward equalization are directly computed from a channel estimate and an estimate of channel geometry.

21. The apparatus of claim 16, wherein a plurality of coefficients of the means for minimum mean square error feedforward equalization are determined from an estimate of a correlation matrix of the received signal and an estimate of a channel mean.

22. The apparatus of claim 15, wherein the first means for linear filtering further comprises means for multiple stage Weiner filtering.

23. The apparatus of claim 15, wherein the second means for linear filtering further comprises means for minimum mean square error feedforward equalization.

24. The apparatus of claim 15, wherein the second means for linear filtering further comprises means for matched filtering.

25. The apparatus of claim 15, wherein the means for despreading the first filtered signal and providing a plurality of symbol estimates for all corresponding channels of the plurality of channels further comprises means for generating an amplitude estimate for all corresponding code channels of the plurality of code channels and means for generating a confidence measure for each symbol estimate of the plurality of symbol estimates.

26. The apparatus of claim 25, wherein means for generating the estimated transmitted signal further comprises:

means for weighting each symbol estimate by its corresponding confidence measure to form a plurality of weighted symbols; and

means for spreading the plurality of weighted symbols using a corresponding plurality of orthogonal codes, a corresponding plurality of amplitude estimates, and a sector spreading code.

27. The apparatus of claim 15, wherein the means for generating an estimated received signal from the estimated transmitted signal and a channel estimate further comprises means for generating the channel estimate by correlation of the received signal with a known pilot signal.

28. An apparatus for symbol determination in a direct sequence spread spectrum multiple access communication system having a plurality of code channels in use, the apparatus comprising:

a network interface for communication with a serving base station;

a memory; and

a processor coupled to the network interface and to the memory, wherein the processor when operative is configured to linearly filter a received signal to form a first filtered signal, to despread the first filtered signal and provide a plurality of symbol estimates for all corresponding code channels of the plurality of code channels; to generate an estimated transmitted signal from the plurality of symbol estimates, to generate an estimated received signal from the estimated transmitted signal and a channel estimate and to produce a residual signal as a difference between the received signal and the estimated received signal; and the processor further configured to linearly filter the residual signal to form a second filtered signal, to combine the second filtered signal with the estimated transmitted signal to form a next estimated transmitted signal, and to despread the next estimated transmitted signal and provide a next plurality of symbol estimates for a selected code channel of the plurality of code channels.

29. The apparatus of claim 28, wherein the processor is further configured to perform linear filtering utilizing minimum mean square error feedforward equalization.

30. The apparatus of claim 29, wherein the processor is further configured to adapt a plurality of coefficients using minimum mean square error feedforward equalization with adaptation to an error determined from the received signal and a known pilot signal.

31. The apparatus of claim 30, wherein the processor is further configured to adapt the plurality of coefficients using a least mean square algorithm.

32. The apparatus of claim 30, wherein the processor is further configured to adapt the plurality of coefficients using a recursive least squares algorithm.

33. The apparatus of claim 29, wherein the processor is further configured to directly compute a plurality of coefficients from a channel estimate and an estimate of channel geometry, for minimum mean square error feedforward equalization.

34. The apparatus of claim 29, wherein the processor is further configured to determine a plurality of coefficients from an estimate of a correlation matrix of the received signal and an estimate of a channel mean, for minimum mean square error feedforward equalization.

35. The apparatus of claim 28, wherein the processor is further configured to perform linear filtering as multiple stage Weiner filtering.

36. The apparatus of claim 28, wherein the processor is further configured to generate an amplitude estimate for all corresponding code channels of the plurality of code channels and generate a confidence measure for each symbol estimate of the plurality of symbol estimates.

37. The apparatus of claim 28, wherein the processor is further configured to generate the estimated transmitted signal by weighting each symbol estimate by its corresponding confidence measure to form a plurality of weighted symbols, and to spread the plurality of weighted symbols using a corresponding plurality of orthogonal codes, a corresponding plurality of amplitude estimates, and a sector spreading code.

38. The apparatus of claim 28, wherein the processor is further configured to generate the channel estimate by correlation of the received signal with a known pilot signal.

39. A method of symbol determination in a code division multiple access communication system having a plurality of code channels in use, the method comprising:

equalizing a received signal, using minimum mean square error equalization, to form a first filtered signal;

despreading the first filtered signal and providing a plurality of symbol estimates for all corresponding code channels of the plurality of code channels;

generating an amplitude estimate for all corresponding code channels of the plurality of code channels and generating a confidence measure for each symbol estimate of the plurality of symbol estimates;

generating an estimated transmitted signal from the plurality of symbol estimates by weighting each symbol estimate by its corresponding confidence measure to form a plurality of weighted symbols, and spreading the plurality of weighted symbols using a corresponding plurality of orthogonal codes, a corresponding plurality of amplitude estimates, and a sector spreading code;

generating an estimated received signal from the estimated transmitted signal and a channel estimate determined by correlation of the received signal with a known pilot signal;

producing a residual signal as a difference between the received signal and the estimated received signal;

equalizing the residual signal, using minimum mean square error equalization, to form a second filtered signal;

combining the second filtered signal with the estimated transmitted signal to form a next estimated transmitted signal; and

despreading the next estimated transmitted signal to form a next despread signal and, using the next despread signal, providing a next plurality of symbol estimates for a selected code channel of the plurality of code channels.

40. An apparatus for symbol determination in a code division multiple access communication system having a plurality of code channels in use, the apparatus comprising:

a first linear equalizer, the first linear equalizer operative to equalize a received signal, using minimum mean square error equalization, to form a first filtered signal;

a code despreader coupled to the first linear equalizer, the code despreader operative to despread the first filtered signal to produce a despread signal;

an amplitude estimator coupled to the code despreader, the amplitude estimator operative to generate an amplitude estimate for all corresponding code channels of the plurality of code channels;

a symbol decider coupled to the code despreader, the symbol decider operative to provide a plurality of symbol estimates from the despread signal for all corresponding code channels of the plurality of code channels and to generate a confidence measure for each symbol estimate of the plurality of symbol estimates;

a transmitted signal estimator coupled to the symbol decider and to the amplitude estimator, the transmitted signal estimator operative to generate an estimated transmitted signal from the plurality of symbol estimates by weighting each symbol estimate by its corresponding confidence measure to form a plurality of weighted symbols, and to spread the plurality of weighted symbols using a corresponding plurality of orthogonal codes, a corresponding plurality of amplitude estimates, and a sector scrambling code;

a channel estimator operative to determine a channel estimate by correlation of the received signal with a known pilot signal;

a received signal estimator coupled to the transmitted signal estimator and to the channel estimator, the received signal estimator operative to generate an estimated received signal from the estimated transmitted signal and the channel estimate;

a summer coupled to the received signal estimator, the summer operative to produce a residual signal as a difference between the received signal and the estimated received signal;

a second linear equalizer coupled to the summer, the second linear equalizer operative to equalize the residual signal, using minimum mean square error equalization, to form a second filtered signal;

a combiner coupled to the second linear equalizer, to the transmitted signal estimator, and to the code despreader, the combiner operative to combine the second filtered signal with the estimated transmitted signal to form a next estimated transmitted signal; and

wherein the code despreader is further operative to despread the next estimated transmitted signal to form a next despread signal and, using the next despread signal, the symbol decider is further operative to provide a next plurality of symbol estimates for a selected channel of the plurality of channels.